

Hemispherical Nature of EUV Shocks Revealed by SOHO, STEREO, and SDO Observations

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EUV wave transients associated with type II radio bursts are manifestation of CME-driven shocks in the solar corona. We use recent EUV wave observations from SOHO, STEREO, and SDO for a set of CMEs to show that the EUV transients have a spherical shape in the inner corona. We demonstrate this by showing that the radius of the EUV transient on the disk observed by one instrument is approximately equal to the height of the wave above the solar surface in an orthogonal view provided by another instrument. The study also shows that the CME-driven shocks often form very low in the corona at a heliocentric distance of 1.2 R_s , even smaller than the previous estimates from STEREO/COR1 data (Gopalswamy et al., 2009, Solar Phys. 259, 227). These results have important implications for the acceleration of solar energetic particles by CMEs.